

Advanced Core Material Updated Technical Bulletin

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Overview

MacroCore™ is a specially engineered, high performance macrosphere syntactic product for demanding composite core applications. MacroCore™ is a completely isotropic material that provides excellent strength and stiffness, finding use in critical areas where the performance of lesser core materials such as Balsa, Honeycomb or blown foams may not be sufficient.

As a core material, the advanced composite syntactic with the toughened matrix provides much higher stiffness and shear strengths, plus far greater impact and shock properties than standard core materials. The material has found most significant use in composite-to-metal joints, a well documented area of concern for all composite structures. As a closed cell structure, the core easily processes in all composite applications including RTM and pultrusion without increasing overall density.

Due to the nature of the constituent materials, the density, strength and stiffness of MacroCore™ may be tailored to the specific requirements of the end user. The product is therefore offered in a range of “standard” densities, as well as specialty grades.

MacroCore™ Sheets are cast as single units, but may be cut to fit the application requirement. Trimmed sheets may also be bonded together to form a larger structure.



Standard size is a 24 inch x 60 inch sheet, but custom sizes and shapes, are available.

Current Sizes In Stock:

1"x 24"x 60"	
2"x 24"x 60"	2.5"x 24"x 60"
3"x 24"x 60"	3.5"x 24"x 60"
4"x 24"x 60"	4.5"x 24"x 60"
5"x 24"x 60"	
6"x 24"x 60"	
8"x 24"x 60"	

Customer specified sizes and cast contoured shapes are also available

Applications

MacroCore™ is presently being used in the Composite Deck House of the new DDG Destroyer. Over 3500 ft³ of material are used in the critical joint areas.

Properties

Standard MacroCore™

Color	Tan	Tan	Green	Blue
Density - lb/ft ³ (kg/m ³)	19 (304)	23 (368)	28 (448)	33 (528)
Compressive Strength ASTM D 1621 psi (MPa)	1,400 psi (9.6 MPa)	2,100 psi (14.4 MPa)	3,200 psi (22.0 MPa)	4,700 psi (32.4 MPa)
Compressive Modulus ASTM D 1621 ksi (MPa)	53.1 ksi (366.1 MPa)	81.3 ksi (560.5 MPa)	86.1 ksi (593.6 MPa)	90.3 ksi (622.6 MPa)
Shear psi (MPa)	600 psi (4.1 MPa)	900 psi (6.2 MPa)	1300 psi (8.9 MPa)	1600 psi (11.0 MPa)

Carbon Fiber MacroCore™

Color	Black
Density lb/ft ³ (kg/m ³)	24 (384)
Compressive Strength ASTM D 1621 psi (MPa)	3,000 psi (20.6 MPa)
Compressive Modulus ASTM D 1621 psi (MPa)	90.3ksi (622.6 MPa)
Shear psi (MPa)	1190 psi (8.2 MPa)